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Industrial Electronics, 1998. Proceedings. ISIE '98. IEEE International Sympos on , Volume: 1 , 7-10 July 1998
Pages:163 - 166 vol.1

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Blum, F.; Denisenko, A.; Job, R.; Borchert, D.; Weber, W.; Borany, J.V.; Hilleringmann, U.; Fahrner, W.R.;
Industrial Electronics Society, 1998. IECON '98. Proceedings of the 24th Annu Conference of the IEEE , Volume: 4 , 31 Aug.-4 Sept. 1998
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09949010 Genuine Article#: 468UQ Number of References: 23
Title: Efficient free-exciton recombination emission from diamond **diode at room temperature**
Author(s): Horiuchi K (REPRINT) ; Kawamura A; Ide T; Ishikura T; Takamura K ; Yamashita S
Corporate Source: Tokyo Gas Co Ltd,Dept Res & Dev, Frontier Technol Lab, Tsurumi Ku,1-7-7 Suehiro Cho/Yokohama/Kanagawa 2300045/Japan/ (REPRINT) ; Tokyo Gas Co Ltd,Dept Res & Dev, Frontier Technol Lab, Tsurumi Ku,Yokohama/Kanagawa 2300045/Japan/
Journal: JAPANESE JOURNAL OF APPLIED PHYSICS PART 2-LETTERS, 2001, V40, N3B (MAR 15), PL275-L278
ISSN: 0021-4922 Publication date: 20010315
Publisher: INST PURE APPLIED PHYSICS, DAINI TOYOKAIJI BLDG, 4-24-8 SHINBASHI, MINATO-KU TOKYO, 105-004, JAPAN
Language: English Document Type: ARTICLE
Geographic Location: Japan
Journal Subject Category: PHYSICS, APPLIED
Abstract: Free-exciton recombination emission of 235 nm in wavelength is obtained by current injection at room temperature from a **diamond** -based pn junction diode composed of B-doped crystal grown by high-temperature, high-pressure synthesis and a S-doped homoepitaxial layer grown by the chemical vapor deposition method. The diode shows a clear rectification characteristic and a high external quantum efficiency of excitonic emission, 8 x 10(-5), which indicates that the excitonic emission of **diamond** is a good candidate for application to semiconductor UV-light-emitting devices. A defect-induced light emission and large leakage current indicate that a higher UV emission efficiency is expected with improvement of the junction quality.
Descriptors--Author Keywords: **diamond ;** UV ; light-emitting diode ; **free exciton ;** electroluminescence ; sulfur-doping ; n-type conductivity
Identifiers--KeyWord Plus(R): CHEMICAL-VAPOR-DEPOSITION; THIN-FILM; ELECTROLUMINESCENCE; SULFUR
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